POINT-TO-MULTIPOINT WIRELESS ACCESS SYSTEM

BACKGROUND OF THE INVENTION

(a) Field of the Invention

The present invention relates to a point-to-multipoint wireless access system and, more particularly, to a point-to-multipoint wireless access system using two different frequency bands for an up-link channel and a down-link channel.

(b) Description of the Related Art

A wireless (radio) communication system is proposed in which a series of narrow-band and wide-band services are offered to an end user based on the request therefrom. Patent Publication JP-A-8(1996)-280058 corresponding to a priority number 94 361355 in USA describes such a wireless communication system, wherein the spectrum allocation is re-allocated in a specified frequency band for variable or optimum use thereof in order to utilize the system more positively.

Although allocation of different frequency bands to an upstream channel (up-link channel) and a downstream channel (down-link channel) is also described in the above publication, the proposed system is such that the different frequency bands thus allocated resides within a single licensed frequency band for the system. Thus, in the proposed system, it is necessary that the licensed frequency band for a cellular phone system be divided to thereby allocate the divided frequency bands to respective up-

link channel and down-link channel. Thus, if the up-link channel and the down-link channel require wide frequency bands, it is difficult to secure the requested wide range of frequency spectrum for one of the up-link and down-link channels.

In addition, since there are some restrictions on the transmitter etc. and the frequency bands used in the conventional wireless access system, it is difficult to realize a cost effective wireless access system.

For example, if a sub-millimeter/millimeter wavelength frequency spectrum (hereinafter referred to as "sub-millimeter/millimeter waveband") is used for the wireless access system, the cost of the transmitters rises sharply. Thus, it is difficult to realize a high-speed transmission by using a wireless access system in a microwave range, which generally affords low-cost wireless transmitter/receiver units, as well as a wide frequency band system, which can be integrated in a network system.

SUMMARY OF THE INVENTION

In view of the above, it is an object of the present invention to provide a wireless access system utilizing the microwave range in conjunction with the higher frequency bands, which is capable of providing a high-speed transmission so that the wireless access system can be integrated in an asymmetric network system.

The present provides a point-to-multipoint wireless access system including a wireless base station, a plurality of wireless subscriber's terminals, a plurality of down-link channels for transmitting data from

said wireless base station to respective said wireless subscriber's terminals, and a plurality of up-link channels for transmitting data from respective said wireless subscriber's terminal to said wireless base station, wherein said down-link channels use a first wireless band and said up-link channels use a second wireless band.

In accordance with he point-to-multipoint wireless access system of the present invention, by separating the second wireless band for the up-link channels from the first wireless band for the down-link channels, the larger capacity data is transferred through one of the up-link and down-link channels by the higher frequency band, whereas the smaller capacity data is transferred through the other of the up-link and down link channels by the lower frequency band. This achieves a lower cost wireless subscriber's terminal which transmits smaller capacity data and receives larger capacity data.

The above and other objects, features and advantages of the present invention will be more apparent from the following description, referring to the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is block diagram of a point-to-multipoint wireless access system according to a first embodiment of the present invention.

Fig. 2 is block diagram of a point-to-multipoint wireless access system according to a second embodiment of the present invention.

Fig. 3 is block diagram of a point-to-multipoint wireless access system according to a third embodiment of the present invention.